Signalment:
• 8 day old male lamb

History:
• Noted to be weak
• Found dead
Case 1

Description

• Numerous, multifocal to coalescing, pale tan, discrete, foci are scattered randomly throughout the liver. These areas measure 0.5 - 3 cm and extend deep into the parenchyma on cut surface.
Case 1

Morphologic Diagnosis

- Hepatitis, necrotizing, multifocal to coalescing, acute, severe
- Hepatic necrosis, multifocal to coalescing, acute, severe
Case 1

What are some possible etiologies for this lesion?

- *Fusobacterium necrophorum* (necrobacillosis)
- *Clostridium piliforme* (Tyzzer’s disease)
- *Listeria monocytogenes* (Listeriosis)
- *Campylobacter fetus fetus*
- *Salmonella*
- *Trueperella pyogenes*

How would confirm a diagnosis?

- Bacterial culture
  - Routine
  - Anaerobic (*F. necrophorum*)
  - Cold enrichment + special media (*Listeria*)
  - Special media – *Campylobacter*
- Histology and silver stain (*C. piliforme*)

Possible routes of infection?

- Hematogenous – umbilical vein
- Direct extension from adjacent organ
- Ascending via biliary tract

Etiology: *Fusobacterium necrophorum*

Disease name = Necrobacillosis
Signalment:
- Adult female beaver

Clinical History:
- Submitted by trapper
  - He noted that the animal was very thin
Case 2

• Several fibrous tags are present on the hepatic capsular surface
• Multiple (5 – 6), round, discrete, yellow to tan, soft/caseous, foci measuring ~ 0.5 – 1.5 cm are scattered randomly throughout the liver
Case 2

- Necrosuppurative hepatitis, multifocal, chronic, mild (moderate)
- (OR Hepatic abscesses, multifocal, chronic, mild to moderate)
- Hepatic capsular fibrosis, multifocal, chronic, mild

Morphologic Diagnosis
Case 2

What are the top 2 differentials for this lesion in this species?

- *Francisella tularensis*
  - Tularemia
- *Yersinia pseudotuberculosis*
  - Yersiniosis

With regard to the differentials, what should you tell the trapper?

- Tularemia is zoonotic and can be acquired in a number of ways:
  - Direct skin contact / Contamination of wounds while skinning infected carcasses
  - Inhalation
  - Bites from ticks on the carcass
  - Yersiniosis is also zoonotic – usually acquired via accidental ingestion

This was *Yersinia pseudotuberculosis* – typically animals that die from tularemia do so acutely and are in good body condition. Yersinia infection may be more chronic.
Signalment:
- Three rabbits ~ 6 months old

Clinical History:
- Resort purchased rabbits (varying breeds and ages) in the spring
- In the fall, they began to find 2-3 dead/dying rabbits per day
- Inappetence, thin body condition, “flop over” and die
Case 3
Case 3

- Scattered randomly throughout the livers are multifocal to coalescing, pale yellow to tan, dry irregular foci of variable size
- On section, many of the areas surround dilated and fibrotic bile ducts
Case 3

Morph Diagnosis

- Cholangiohepatitis, proliferative and necrotizing, multifocal, chronic, severe, with intralesional coccidia
Case 3

Etiology

- *Eimeria stiedae*
Case 3

Disease Name
- Black Head
- Histomoniasis

Etiology
- *Histomonas meleagridis*
Signalment:
• Adult male caribou

Clinical History:
• Caribou shot by hunter
• They noted the liver was abnormal – submitted it
Several round cyst-like cavities, each surrounded by a thick fibrous capsule, are present multifocally within the liver. Within these structures, there are coiled trematodes.

The flukes are leaf shaped, dorsoventrally flattened, measuring ~5 – 8 cm x 3 – 4 cm with an oral and ventral sucker.

Fine black tortuous tracts are present multifocally in the parenchyma.
Case 4

Morph Diagnosis

- Hard specimen to morph!
- Cholangiohepatitis, necrotizing (eosinophilic), multifocal, moderate to severe, chronic, with fibrosis

What is the etiology?

- *Fascioloides magna*
Case 4

- Bacillary hemoglobinuria
- *Clostridium hemolyticum*
- Black Disease
- *Clostridium novyi*

In sheep and cattle, what 2 diseases may be precipitated by these lesions?

- Bacillary hemoglobinuria
  - *Clostridium hemolyticum*
- Black Disease
  - *Clostridium novyi*
Liver injury by migrating flukes
Anaerobic environment
Germination of *Clostridium hemolyticum* spores (latent in the liver)
Release exotoxins
Liver necrosis and intravascular hemolysis
Hemoglobinuria

Liver injury by migrating flukes
Anaerobic environment
Germination of *Clostridium novyi* spores (latent in the liver)
Release exotoxins
Liver necrosis and vascular damage
Subcutaneous hemorrhage

**What is the pathogenesis of one of these diseases?**
Case 5

Signalment:
- 7 year old FS boxer

Clinical History:
- Abdominal swelling and pain
- Icterus
- Radiographs – hepatomegaly and masses in lung
The liver is markedly enlarged with several variably sized, ill-defined, lobulated to nodular masses invading the parenchyma and protruding from the surface. The masses are solid, firm, tan to brown and range from 0.3 to 16 cm in size and occasionally have umbilication of the surface or omental adhesions.
Case 5

What type of disease process does this represent?
Neoplasia

Is this benign or malignant?
Malignant – invasive and multifocal

Morphologic Diagnosis

- Malignant neoplasia, multifocal, liver
Case 5

Differentials

- Primary neoplasia
- Cholangiocellular carcinoma*
- Hepatocellular carcinoma
- Metastatic carcinoma – pancreatic, mammary, intestinal, etc
How would you achieve a diagnosis?

Histology!

Careful evaluation for a primary mass at another site

This was hepatocellular carcinoma
Signalment:
• 13 year old, male dog

Clinical History:
• Acute vomiting/anorexia for 3 days
• Intestinal foreign body noted on ultrasound
• Gall bladder had a “kiwi pattern” on US
Case 6

- The gall bladder is markedly enlarged and dilated measuring ~3 – 4 cm in diameter x 12 cm long with thinning of the wall
- The content is solid and soft (mucoid) and dark green
Case 6

Morphologic Diagnosis

• Gall bladder mucocele
Case 6

Predisposed breeds?
Small breed dogs – Shelties, Cocker Spaniels

Possible sequela?
Gall bladder necrosis and rupture or biliary outflow obstruction

Associated lesion?
Cystic mucinous hyperplasia
Case 6

**Morphologic Diagnosis / Disease name?**

- Cholelithiasis, gall bladder (gallstones)

**Possible sequela**

- Biliary obstruction